

# Correlates of Suicide Risk in Adolescent Inpatients Who Report a History of Childhood Abuse

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The study objective was to examine correlates of suicide risk in psychiatrically hospitalized adolescents with a reported history of childhood abuse. Predictors of suicide risk were examined in 74 subjects who reported a history of childhood abuse and 53 depressed subjects who did not report a history of childhood abuse. Subjects completed a battery of psychometrically well-established self-report instruments to assess childhood abuse, suicide risk, and internalizing and externalizing psychopathology. Correlational analyses showed that higher levels of depression, self-criticism, and hopelessness were significantly associated with suicide risk in both study groups and violence was significantly associated with suicide risk in the childhood abuse group. For the childhood abuse group, multiple regression analyses with seven predictor variables accounted for 54% of

the variance in suicide risk; depression and alcohol problems made significant independent contributions, while violence and self-criticism were independent predictors at the trend level. For the depressed/nonabused group, multiple regression analyses with the seven predictor variables accounted for 60% of the variance in suicide risk; depression, hopelessness, and self-criticism were independent predictors. Our findings suggest that both internalizing (i.e., depression or self-criticism) and externalizing (i.e., violence or alcohol) factors predict suicide risk in adolescent inpatients who report childhood abuse. This profile appears different from the more internalizing pattern (i.e., depression, self-criticism, and hopelessness) observed for the depressed adolescent inpatients who reported no history of childhood abuse.

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**C**HILDHOOD ABUSE, defined as sexual, physical, and/or emotional maltreatment, is quite prevalent,<sup>1,2</sup> is associated with many negative consequences, and represents a major public health problem.<sup>3,4</sup> Childhood abuse is associated with an increased risk for a plethora of short- and long-term negative sequelae.<sup>5-7</sup> It is associated with an increased risk for a variety of psychological and behavioral problems (e.g., depression, substance abuse, and aggression) and psychiatric disorders.<sup>8-10</sup> A recent review of 45 studies concluded that abused children are consistently more symptomatic than nonabused children for nearly all symptoms and behaviors examined.<sup>4</sup>

One serious problem area frequently noted in adolescents with a history of abuse is suicidality.<sup>11-14</sup> Suicidality and childhood abuse are two experiences common to adolescent psychiatric patients.<sup>15,16</sup> Among psychiatrically hospitalized adolescents, patients with a childhood abuse history have higher rates of suicidality than patients without a history of abuse.<sup>11,13</sup>

An improved understanding of factors associated with the increased risk for suicide in adolescent inpatients with a history of childhood abuse may help clinicians to identify those at risk and may ultimately inform the development of effective prevention and intervention programs. This represents a particularly pressing research need, since suicide represents one of the top three causes of death for adolescents in the United States.<sup>17</sup> Since psychiatric disorder represents perhaps the most potent predictor of suicidality<sup>18</sup> and completed suicide,<sup>19-21</sup> a focus on inpatients has particular clinical relevance.

There exists a voluminous literature on the risk factors for adolescent suicide.<sup>22,23</sup> Empirical studies have reported an association between suicidality and depression<sup>21</sup> and depressive psychological variables such as the level of depression, perfectionism and self-criticism, and hopelessness.<sup>24-29</sup> Empirical studies have also reported an association between suicidality and violence, aggression, and impulsivity.<sup>30-35</sup> Lastly, alcohol and drug problems, which frequently coexist in adolescents with both internalizing and externalizing problems,<sup>36,37</sup> are associated with a heightened risk for suicidality.<sup>19-21</sup>

Although there are numerous models of adolescent suicide,<sup>22,38,39</sup> we chose to organize our investigation of suicide risk in adolescents with an abuse history around the specific internalizing depressive phenomena and certain externalizing phenomena empirically demonstrated to be associated with

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suicidality. In this study, we examine the association between suicide risk and selected depressive variables (level of depression, hopelessness, self-criticism, and dependency) and selected externalizing variables (violence, impulsivity, and alcohol problems) in a heterogeneous inpatient study group of adolescents who report childhood abuse. The heterogeneous inpatient study group has ecologic validity given its similarity to the psychiatric profiles of the vast majority of adolescent suicides.<sup>19-21</sup> To our knowledge, these specific domains have not been examined simultaneously in one high-risk study group—adolescents reporting childhood abuse histories—to predict suicide risk.

To provide a context for understanding the pattern of findings for the abused group, we also examine the association between suicide risk and the selected variables in a comparison group of adolescent inpatients with mood disorders who do not report a history of childhood abuse. Our strategy was to obtain the comparison group from the same overall study population (i.e., inpatient admissions to the same unit during the same time interval as the abused study group assessed with exactly the same methodology and measures). This approach lessens the potential impact of selection and sampling confounds.<sup>40</sup> In addition, following the conceptual reasons outlined by Allison,<sup>41</sup> we created a “relevant” comparison group by selecting depressed subjects without abuse histories. The variables selected are known to be associated with depression,<sup>22-29</sup> and depression occurs in abused and nonabused persons.<sup>42</sup>

## METHOD

### Subjects

The subjects were 127 adolescent inpatients selected from a nearly consecutive series of 340 patients admitted to the evaluation and crisis intervention unit of a private not-for-profit teaching psychiatric hospital. Patients were admitted based on the need for inpatient-level intervention. The 127 subjects included in this study were selected from the overall population to create two study groups (childhood abuse v depressed/nonabused) as described later. At the time of admission, all subjects and their parents (or legal guardians) provided written informed consent for evaluation.

Of 127 subjects, 38 (29.9%) were male and 89 (70.1%) were female. The age range was 12 to 18 years (mean  $\pm$  SD, 15.8  $\pm$  1.5). One hundred nine (85.8%) of the subjects were Caucasian, 10 (7.9%) were Hispanic-American, and eight (6.3%) were African-American. The subjects were predominately from lower- to middle-class families. Global Assessment of Functioning (GAF)<sup>41</sup> ratings were 53.7  $\pm$  11.5 at the time of

admission and 62.1  $\pm$  11.5 for the year prior to admission (mean  $\pm$  SD).

This inpatient study group was diagnostically heterogeneous. The most frequently assigned DSM-III-R<sup>43</sup> diagnoses for the 127 subjects were, in descending order, major depression (52.8%), drug use disorders (40.2%), alcohol use disorders (23.6%), and conduct disorder (17.3%). These clinical consensus diagnoses were generated at discharge based on a review of each patient's history and presenting data by a multidisciplinary treatment team of experienced clinicians with faculty supervision (D.C.F.); semistructured diagnostic interviews were not used.

### Study Groups: Childhood Abuse Versus Depressed/Nonabused

Two study groups of patients were created. The childhood abuse group consisted of 74 adolescent inpatients who reported a substantial history of childhood abuse as reflected by a score above the clinical cutoff on the Childhood Abuse Scale of the Millon Adolescent Clinical Inventory<sup>44</sup> ([MACI] described later). The depressed/nonabused group contained 53 patients who met DSM-III-R<sup>43</sup> criteria for a mood disorder (60.4% major depression and 49.1% dysthymia) and had a score of 18 or greater on the Beck Depression Inventory<sup>45</sup> ([BDI] described later). The comparison group was also selected based on a score below 55 on the MACI.<sup>44</sup>

Table 1 summarizes the demography, severity, and diagnostic profiles of the two study groups and statistical tests for significant differences. The two study groups did not differ in

**Table 1. Demographic Characteristics and Severity-of-Illness Variables for the Two Study Groups**

Characteristic	Abused (n = 74)		Depressed (n = 53)		F(1, 125) or $\chi^2$ (1)	P
	No.	%	No.	%		
Age, yr (mean $\pm$ SD)	16.0 $\pm$ 1.5		15.6 $\pm$ 1.5		2.6	NS
Gender					3.3	NS
Male	22	29.7	16	30.2		
Female	52	70.3	37	69.8		
Ethnicity					8.8 (df = 2)	.02
Caucasian	58	78.4	51	96.2		
African-American	8	10.8	0	0.0		
Hispanic	8	10.8	2	3.8		
Current GAF (mean $\pm$ SD)	51.5 $\pm$ 11.6		56.6 $\pm$ 10.8		6.12	.02
Past year GAF (mean $\pm$ SD)	59.0 $\pm$ 10.5		66.1 $\pm$ 11.0		12.85	.000
Current psychiatric diagnoses						
Major depression	35	47.3	32	60.4	1.63	NS
Dysthymia	27	38.0	26	49.1	1.09	NS
Conduct disorder	15	20.3	7	13.2	0.64	NS
ADHD	8	10.8	6	11.3	0.00	NS
Drug use disorder	33	44.6	18	34.0	1.04	NS
Alcohol use disorder	21	28.4	9	17.0	1.64	NS

NOTE. All tests are 2-tailed.  $\chi^2$  test was performed with Yates' continuity correction.

Abbreviations: ADHD, attention-deficit hyperactivity disorder; NS, nonsignificant.

age, gender distribution, or distribution of psychiatric disorders, including depression. The depressed/nonabused group had a significantly higher proportion of Caucasian subjects and significantly higher current and past-year GAF scores.

### Procedure

The subjects completed a battery of self-report instruments between 1 and 4 days of admission. All measures were administered and scored by computer. Computerized administration of psychological measures has been found to compare favorably with standard paper-and-pen methods<sup>46,47</sup> and may be particularly useful for assessing sensitive topics such as suicidality.<sup>48,49</sup>

**MACI.** The MACI is a 160-item self-report inventory developed and normed with clinical samples<sup>44,50</sup> and used with adolescent inpatients.<sup>50,51</sup> The MACI is characterized by good psychometric properties and good theoretical-substantive, internal-structural, and external-criterion validation.<sup>44,50</sup> The MACI has been validated against several measures of psychological functioning and shows adequate test-retest reliability (range, .57 to .92 for individual scales) and adequate internal consistency (alpha coefficient, .73 to .91 for individual scales).

The MACI child abuse scale contains 24 items that assess for various forms of abuse (e.g., "People did things to me sexually when I was too young to understand."). High scores on this scale reflect adolescent self-reports of shame or disgust about having experienced sexual, physical, or verbal abuse from others. The MACI childhood abuse scale showed adequate internal consistency in two validation samples (.83 and .81) and a test-retest (3 to 7 days) correlation of .81.<sup>44</sup> Scores on the childhood abuse scale were significantly correlated with clinician judgments ( $r = .43, P < .001$ ) in the concurrent validation study.<sup>44</sup>

Subjects were selected for the childhood abuse group based on a score above the clinical cutoff ( $>70$ ), and for the depressed/nonabused group based, in part on a score below 55 on this scale. Given this selection requirement, the childhood abuse group had a significantly higher score than the depressed/nonabused group (mean  $\pm$  SD,  $83.9 \pm 11.4$  v  $41.4 \pm 10.4$ ,  $F(1, 125) = 463.84, P < .0000$ ).

**Suicide Risk Scale.** The Suicide Risk Scale (SRS)<sup>30</sup> is a 15-item true/false self-report measure of current suicidal feelings, past suicidal behavior, and other items that are shown to be associated with suicide risk. The SRS has good internal reliability, with a coefficient alpha of .74 in adolescents, as well as good sensitivity and specificity.<sup>30-32</sup> The SRS has been cross-validated with other inpatient samples and discriminates well between patients who have made a suicide attempt in the past and those who have never made such an attempt. Studies have found, for instance, that SRS scores average roughly 4 for nonsuicidal patients, 6 for patients with one suicide attempt, and 8 for patients with multiple attempts.<sup>30-32</sup> The SRS served as the independent variable in this study.

**BDI.** The BDI 21-item version<sup>45,52</sup> is a well-established widely used inventory of the cognitive, affective, motivational, and somatic symptoms of depression. It has been researched extensively with adolescents<sup>53</sup> and is shown to have excellent psychometric properties with adolescent patients.<sup>53-55</sup> Strober et al.<sup>55</sup> reported an internal consistency of .79, a .67 correlation with clinical ratings of depression, and a 5-day test-retest reliability of .69 for a sample of adolescent inpatients. Cutoff points for the BDI are as follows: 0 to 9 (nondepressed), 10 to 15 (mild depression), 16 to 23 (moderate depression), and 24 or

higher (severe depression). A BDI cutoff score of 16 or higher is generally recommended as a cutoff for major depression.<sup>45,52</sup>

**Depressive Experiences Questionnaire for Adolescents.** The Depressive Experiences Questionnaire for Adolescents (DEQ-A)<sup>56</sup> is a 66-item self-report questionnaire to assess depressive experiences in the lives of depressed patients that are not necessarily regarded as clinical symptoms of depression. Responses are made on a seven-point Likert-type scale. Scoring the DEQ-A<sup>56</sup> involves transformations of scored items for each factor; a score of 0 reflects a mean score, with a score of  $-1.0$  and  $1.0$  representing 1 SD below and above the mean, respectively.

We focused on the two main factors of the DEQ-A,<sup>57,58</sup> interpersonal (dependent) dysphoria and self-critical dysphoria. The first factor, dependency, reflects a depreciated sense of self, dependency, and helplessness. The second factor, self-criticism, reflects self-blame, guilt, and a loss of autonomy. These DEQ-A factors have been replicated with community samples of high school students<sup>54,55</sup> and demonstrate a high level of internal consistency, good retest reliability, and convergent validity.<sup>57,58</sup>

**Hopelessness Scale for Children.** The Hopelessness Scale for Children (HSC)<sup>59</sup> is a 17-item true/false scale for children and adolescents that measures negative expectations about the future. The HSC has been used with adolescents and demonstrated good psychometric properties.<sup>59,60</sup> Its internal consistency ( $\alpha = .97$ ) is excellent, and its test-retest reliability (.52) is adequate.<sup>59</sup> Kazdin et al.<sup>59</sup> suggested a HSC cutoff score of 7 as reflecting "high hopelessness" in their psychometric analysis.

**Past Feelings and Acts of Violence Scale.** The Past Feelings and Acts of Violence Scale (PFAV)<sup>33</sup> is a 12-item self-report scale where responses are coded on a 3-point continuum of frequency. The scale inquires about the frequency of feelings of anger, past acts of violence toward others, use of weapons, and history of arrests. The scale has been demonstrated to have good discriminative validity with adult psychiatric inpatients, and with adolescents, it has been shown to have good internal consistency, item sensitivity, and specificity.<sup>34</sup> A PFAV mean score of  $12.3 \pm 4.6$  has been reported for violent adolescent inpatients.<sup>34</sup>

**Impulsivity Control Scale.** The Impulsivity Control Scale (ICS)<sup>31</sup> is a 15-item self-report scale designed to assess impulsivity that is independent of aggressive behavior; items are answered on a three-point frequency scale. With adolescents, the ICS has good internal reliability and correlates well with other measures of suicide and violence risk.<sup>31,34</sup>

**Alcohol Abuse Involvement Scale.** The Alcohol Abuse Involvement Scale (AAIS)<sup>61</sup> is a 14-item self-report screening measure for alcohol abuse relevant for adolescent populations. The measure identifies adolescents whose alcohol use interferes with psychological, social, and family functioning. The AAIS has demonstrated good psychometric properties in adolescent samples, including excellent test-retest reliability in clinical and nonclinical samples (.91 and .89) and positive discriminative power for distinguishing alcohol abusers from infrequent users using a cutoff score of 42.<sup>61-63</sup>

## RESULTS

Table 2 summarizes the group scores on the battery of seven self-report instruments. It is important to note—consistent with our selection requirement of the presence of depression and a BDI score of at least 18—that the two groups did not differ in

**Table 2. Scores on Psychological Measures for Childhood Abuse Group and Comparison Group (mean  $\pm$  SD)**

Measure	Childhood Abuse Group (n = 74)	Depressed/Nonabused Group (n = 53)	F(1, 125)	P
SRS	9.1 $\pm$ 2.6	8.5 $\pm$ 2.6	1.50	NS
BDI	25.6 $\pm$ 12.4	26.2 $\pm$ 5.9	0.11	NS
HSC	7.8 $\pm$ 4.4	9.1 $\pm$ 3.9	3.05	NS
DEQ-A				
Self-criticism factor	0.6 $\pm$ 1.0	1.0 $\pm$ 0.9	5.84	.02
Dependency factor	0.6 $\pm$ 1.2	0.4 $\pm$ 1.1	1.90	NS
PFAV	12.1 $\pm$ 6.6	10.0 $\pm$ 6.8	3.27	.08
ICS	22.6 $\pm$ 6.4	21.7 $\pm$ 5.3	0.72	NS
AAIS	40.1 $\pm$ 19.1	32.0 $\pm$ 17.5	6.02	.02

the mean BDI score. Thus, the two groups are comparable for the frequency of a clinically generated categorical diagnosis of depression and the dimensional level of depression severity.

Analysis of variance (ANOVA) showed that the childhood abuse group had significantly lower scores on the self-criticism scale of the DEQ-A, significantly higher scores on the AAIS, and a nonsignificant trend for higher violence (PFAV scale).

A separate set of ANOVAs were performed to test for possible gender differences within each of the two study groups. For the abused group, ANOVAs found no significant gender differences for six of the seven instruments; females had significantly higher scores on the dependency scale of the DEQ-A. Similarly, ANOVAs found no significant gender differences for the seven instruments.

Table 3 shows correlations between each of the seven variables and the SRS separately for the two study groups. Correlational analyses showed that

**Table 3. Associations of the Psychological Measures With the SRS**

Measure	Childhood Abuse Group (n = 74)			Depressed/Nonabuse Group (n = 53)		
	r	P	Multi-variate	r	P	Multi-variate
BDI	.66	.000	.000	.63	.000	.001
HSC	.57	.000		.61	.000	.006
DEQ-A						
Self-criticism factor	.55	.000	.08	.32	.02	.01
Dependency factor	.08	NS		.09	NS	
PFAV	.28	.02	.08	.23	NS	
ICS	.17	NS		.04	NS	
AAIS	.15	NS	.04	-.10	NS	

NOTE. Multivariate is the significance level for the variable in multiple regression analysis with all variables entered simultaneously.

the following were significantly associated with suicide risk in both study groups: depression level (BDI), self-criticism (DEQ-A), and hopelessness (HSC). In addition, violence (PFAV) was significantly associated with suicide risk in the childhood abuse group but not in the depressed/nonabused group.

Separate multiple regression analyses with simultaneous entry were used to test the joint and independent contributions of the seven predictors of suicide risk for the two study groups. In the childhood abuse group, 54% of the variance in suicide risk was accounted for ( $F(7, 66) = 11.16$ ,  $P < .0000$ ). Depression ( $\beta = .42$ ,  $T = 3.5$ ,  $P < .000$ ) and alcohol use problems ( $\beta = .19$ ,  $T = 2.2$ ,  $P < .04$ ) emerged as significant independent predictors of suicide risk. Violence ( $\beta = .19$ ,  $T = 1.8$ ,  $P < .08$ ) and self-criticism ( $\beta = .21$ ,  $T = 1.8$ ,  $P < .08$ ) were independent predictors at a trend level. In the depressed/nonabused group, 60% of the variance in suicide risk was accounted for ( $F(7, 45) = 9.6$ ,  $P < .0000$ ). Depression ( $\beta = .40$ ,  $T = 3.5$ ,  $P < .000$ ), hopelessness ( $\beta = .33$ ,  $T = 2.9$ ,  $P < .006$ ), and self-criticism ( $\beta = .28$ ,  $T = 2.7$ ,  $P < .01$ ) emerged as significant independent predictors of suicide risk.

## DISCUSSION

This study has examined the symptomatic psychological and behavioral correlates of suicide risk in psychiatrically hospitalized adolescents who reported a history of childhood abuse. We examined the association between suicide risk and psychological factors tapping internalizing and externalizing phenomena previously found to be associated with suicidality across a range of patient study groups. Previous investigations, while beginning to explore the question of different risk profiles for specific subgroups (i.e., DSM-based diagnoses<sup>39</sup> in violent v suicidal patients<sup>35</sup>), have not, to our knowledge, examined this issue for adolescent inpatients with childhood abuse. Our study group of adolescents who reported high rates of childhood abuse was diagnostically heterogeneous, with high rates of major depression, conduct disorder, and substance abuse problems. This constellation of diagnoses resembles the diagnostic profile consistently found to have the highest relative risk for both suicidality and suicide.<sup>18-21</sup> Moreover, to provide a context for our findings of suicide risk predictors, we performed similar analyses in a study group of depressed inpatients who do

not report a history of abuse. The comparison group was obtained from the same overall study population,<sup>40,41</sup> was assessed with identical protocols, and was similar in many demographic and psychiatric features, including most notably a similar distribution and severity of depression.

We found that higher levels of depression, self-criticism, and hopelessness were significantly associated with suicide risk in both study groups, and violence was significantly associated with suicide risk in the childhood abuse group. For the childhood abuse group, multiple regression analyses with seven predictor variables accounted for 54% of the variance in suicide risk; depression and alcohol problems made significant independent contributions, while violence and self-criticism were independent predictors at the trend level. For the depressed/nonabused group, multiple regression analyses with the seven predictor variables accounted for 60% of the variance in suicide risk; depression, hopelessness, and self-criticism were independent predictors.

Thus, our findings suggest that both internalizing (i.e., depression and self-criticism) and externalizing (i.e., violence and alcohol) factors predict suicide risk in adolescent inpatients who report childhood abuse. This profile appears different from the more internalizing pattern (i.e., depression, self-criticism, and hopelessness) observed for the depressed adolescent inpatients who reported no history of childhood abuse. This general finding echos the "cycle of violence," i.e., violence begets violence both against oneself and others.<sup>64</sup>

Although it was not a focus of our study, it is worth noting that we found no gender differences in the SRS or its correlates, with the exception of one internalizing variable (dependency). Although this topic has received relatively little empirical attention to date, we note that most studies,<sup>4,65</sup> but not all, have reported surprisingly similar patterns for the psychological sequelae of abuse in males and females. This area clearly deserves additional research attention.<sup>12</sup>

The cross-sectional nature of this study precludes any discussion of causality. Indeed, previous reports have aptly noted that the complex associations between childhood abuse, psychological problems, and suicidality can arise, in part, due to a variety of influences and contextual factors.<sup>1,3,22,24,38</sup> However, the primary goal of the present study was limited to developing a greater specificity of psychological factors related to suicide risk in a population

where suicide risk is a relatively high-base-rate phenomenon and established factors do not differentiate risk well.

Moreover, we note that our focus was on predicting suicide risk scores and not suicide *per se*. The prediction of completed suicide and particularly its timing is difficult,<sup>66</sup> especially in light of the low base rate of completed suicide. Nonetheless, our focus on the selected psychological variables has relevance to clinical populations, since it is suicide risk and suicidality that precipitates treatment.<sup>15</sup> It is worth noting that suicide autopsy studies have consistently found that the majority of adolescent suicide victims had previous suicidality and attempts.<sup>21,67</sup> Moreover, studies have reported many similarities in the risk factors for suicide attempts and suicide completion.<sup>68</sup> Importantly, studies of completed suicide are limited by the degree of specificity of the measures of distress and psychopathology. Thus, studies of the present type offer details and clues that are typically unavailable in suicide autopsy studies.

Our focus was the prediction of suicide risk in patients who report a history of childhood abuse. The validity of reports of abuse is a complex issue.<sup>69</sup> Our report speaks only to the psychological profiles of adolescent inpatients who report or do not report a history of abuse. Moreover, the abuses identifying the study group represent a heterogeneous collection of abusive experiences (sexual, physical, and emotional). This opens the door for future research to focus on whether the psychological correlates of suicide risk vary differentially by the characteristics and timing of the abuse, for studies with more precisely identified abuse histories, and whether the extent and nature of abuse directly contributes to the suicide risk.<sup>70</sup>

We relied on a self-report battery of instruments and computerized administration of the questionnaires. While some might argue that there are limitations inherent to self-report methodologies, this approach has proven useful for assessing sensitive topics such as those in the present study.<sup>48,49</sup> This method may be especially important in adolescents, since it may remove some interpersonal concerns (e.g., embarrassment or distress) or barriers to the accurate disclosure of sensitive or personal matters. Computerized assessments of self-report instruments similar to those used here have been found to be preferable to paper-and-pen versions in terms of reliability and validity.<sup>46,47</sup>

### Summary

We found that both internalizing (i.e., depression and self-criticism) and externalizing (i.e., violence and alcohol) factors predict suicide risk in adolescent inpatients who report a history of childhood

abuse. This profile appears different from the more internalizing pattern (i.e., depression, self-criticism, and hopelessness) observed for the depressed adolescent inpatients who reported no history of childhood abuse.

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